

REMARKS

A Final Rejection was mailed in the present case on March 12, 2003, making a response due on or before June 12, 2003. This response is being submitted, along with a Petition For Extension of Time Within the First Month, and the required extension fee of \$110.00 for a large entity. The response accompanies a Request For Continued Prosecution. If any additional fee is due for the continued prosecution of this application, please charge the same to Applicant's Deposit Account No. 50-2555 (Whitaker, Chalk, Swindle & Sawyer, LLP).

Applicant's invention involves the addition of hydrated lime, i.e., $\text{Ca}(\text{OH})_2$, to asphalt compositions used to make asphalt roofing structures or materials, namely shingles and roll roofing material. More specifically, Applicant is claiming the chemical benefits of adding hydrated lime to an un-modified (non-polymeric) asphalt bitumen, to improve specific end use parameters in roofing applications. Applicant has explained in previous responses that various forms of "lime and limestone" have been used in asphalt roofing compositions in the past. Thus, it is critical for purposes of the present invention to distinguish the various chemical forms or states of these materials. Applicant's are claiming the addition of "hydrated lime" within certain select percentages to the un-modified, non-polymeric asphalt base compositions. Limestone is a mineral which is mined both here and in Europe and is used in various industries in crushed or powdered form. Powdered limestone is converted to quicklime (calcium oxide), by roasting in rotary kilns. Powdered quicklime is used for a large variety of industrial applications such as in flue gas desulfurization processes. Quicklime is slaked with water to form hydrated lime (calcium hydroxide). It is the slaked, hydrated form of lime which is useful for the purposes of the present invention.

Applicant has basically made the discovery that the addition of hydrated lime improves the tear strength of roofing shingles as compared to other conventional limestone type "filler" materials. In the most preferred form of the invention now described in amended Claim 1, the hydrated lime is added to an asphalt composition containing dolomite as the preferred filler. Thus, in the amended claim language, Applicant is claiming the specific combination of a particular type of filler (dolomite)

with a particular form of lime (hydrated lime). The addition of hydrated lime was shown in tests to improve performance from 15% less than the control to 15% better than the control.

Improved tear strength is a relatively new specification for asphalt shingles. As a result, none of the cited references appear to be addressing the problem of tear strength. Many of the prior art references add lime and lime derivatives merely as filler materials. The addition of hydrated lime in Applicant's claimed invention is not the addition of a filler material in the conventional sense, but rather the addition of an active coupling agent between the traditional filler, the asphalt and other components of the total composition, e.g., the fiberglass mat. In other words, Applicant has found that the addition of hydrated lime, in select percentages, to a dolomitic limestone filler in the asphaltic base composition of asphalt roofing structures produces a greatly improved bond between the aggregate/filler, fiber glass mat or other substrate form, and asphalt, especially in the presence of water which has a stronger affinity for the aggregate than does the asphalt. The result of this chemical interaction is improved tear strength and durability in the shingle or roll roofing material. The greatly improved results achieved by using Applicant's formulation is illustrated graphically in Figure 10 of the drawings as originally filed.

Applicant therefore uses an additional ingredient to traditional limestone type fillers in asphalt compositions which are applied to suitable substrates to form asphalt roofing structures. However, it is also important to note that Applicant does not leave out or eliminate the filler component. This distinction is considered important in that certain of the prior art references may have used limestone filler or hydrated lime alternatively, but not both together. Applicant's hydrated lime is used in a specific range (1-10%, preferably 3-5% by weight of asphalt) and performs a function which differs from traditional "limestone" and other types of "filler" materials.

The Examiner has rejected Applicant's independent Claims 1 under 35 U.S.C. Section 103(a) based upon the reference to George in view of Anthenien and Applicant's admissions. George shows a prior art asphalt roofing structure containing the traditional constituents of an asphaltic base and filler

which are applied to a substrate form. However, George fails to teach the advantage of adding the additional component of hydrated lime, which is basically the point of Applicant's invention.

Anthenien is then cited to show the addition of hydrated lime to an asphalt composition which can be used in roofing applications. The Examiner also notes that hydrated lime is a known form of an alkaline earth metal hydroxide as discussed in the Background of Applicant's Specification. Claim 1 was also rejected based on the alternative ground of the combined teaching of George with Karacsonyi. The Karacsonyi reference is cited for a teaching of the use of an alkaline earth metal hydroxide and a filler in asphalt roof compositions.

Applicant's independent Claim 1 was also rejected based upon George in view of either the Little patent or WO publication. The Little references are cited to show an asphalt composition containing an alkaline earth metal hydroxide for anti-stripping properties.

For the reasons which follow, Applicant respectfully traverses the above rejections and asks for the Examiner's reconsideration of the remaining amended claims.

The George reference is a mere restatement of the existing state of the art in asphalt roofing compositions. Thus, Applicant's teaching of the advantages of the use of an additional component, namely the hydrated lime component must be found in one of the supplemental references. The first of these supplemental references cited by the Examiner is the Anthenien reference. The Anthenien reference describes the addition of hydrated lime to an acrylic emulsion, the acrylic emulsion being added to asphalt roofing materials to make it workable at ambient temperatures. The emphasis of the patent is to produce a polymer modified asphalt so that the asphalt does not have to be heated to make it flowable. As stated in Anthenien, "A primary objective of the instant invention is to provide a process of manufacturing an improved asphaltic compound which may be carried out at ambient air temperatures with a very fast reaction time." Applicant's amended Claim 1 was previously amended to specifically call for the asphaltic constituents to be "heated" in contrast to the teaching of Anthenien.

Perhaps more importantly, Claim 1 has been further amended to describe the asphalt constituent of the composition as being "non-polymeric" to further distinguish Anthenien. Applicant's remaining independent Claim 12 has been amended to use the "consisting essentially of" language to distinguish the Anthenien teaching which includes the addition of a copolymer of methylmethacrylate and ethyl acrylate as an additional major component. Applicant's closed ended terminology is intended to distinguish the addition of such an additional component which has no purpose for Applicant's claimed invention. Applicant is not attempting to produce a modified asphalt, but rather achieves greatly improved results in traditional un-modified asphalt bitumen roofing compositions. Significantly, Anthenien fails to teach any benefit of adding hydrated lime over its use as a traditional type filler.

The Karacsonyi reference is directed toward the preparation of "aqueous bituminous dispersions" which eliminates the need for an emulsifier. While the reference refers generally to materials used in the construction industry, it is not specifically directed to an "asphalt roofing structure". While these bituminous emulsions might be useful, for example, as roof sealants, they are not traditional bituminous roofing shingles as defined in Applicant closed ended claim terminology. Because the structures are not shingles, there is no discussion in the patent of tear strength or how to improve this property of a roofing shingle.

The final references which the Examiner relies upon to combine with George to arrive at Applicant's invention are the Little references, both of which contain the same teaching. The Little references deal with hot mix asphalts used for "road paving" applications. The references, which are assigned to the assignee of the present invention, are directed to the order of addition of the ingredients which promotes adhesion between the asphalt and filler and exhibits antistripping qualities. However, the teaching of the reference is not directed toward traditional "roofing" materials of the type envisioned by George and by Applicant and as a result do not address the problem of tear strength or its improvement.

To summarize, not even a combination of the teaching of the cited references suggests Applicant's claimed compositions which include the additional ingredient of a "hydrated lime" component to a traditional asphalt roofing composition also containing a dolomitic limestone filler, in select percentages, in order to increase the tear strength and durability of such compositions (as shown by the examples and data in Applicant's Specification). The secondary references cited by the Examiner for particular fillers, etc., cannot make up the deficiency in the teaching of George, even in view of its combination with Anthenien, Karacosonyi or the Little references.

Accordingly, Claims 1, 4, 8-10 and 12 are thought to be allowable over the art of record and an early notification of the same would be appreciated.

Respectfully submitted,



Date: July 11, 2003

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